

REPORT ON THE LAND AND FRESH-WATER SHELLS COLLECTED
BY MR. HERBERT H. SMITH AT ST. VINCENT, GRENADA,
AND OTHER NEIGHBOURING ISLANDS.

By EDGAR A. SMITH, F.Z.S., etc.

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PLATE XXI.

THE collection about to be described forms part of a consignment of specimens obtained by Mr. H. H. Smith, who, under the auspices of a joint committee of the Royal Society and the British Association, was instructed to make collections of the fauna and flora of some of the Lesser Antilles. The molluscan fauna of many of these islands is but very imperfectly known, and therefore the results obtained under the direction of this committee are of considerable value. Reports upon collections from Dominica and St. Lucia have already been published by the writer.¹

I. ST. VINCENT.

Up to the present time no complete list of the known species of this island, with referenees, has been published, and it is therefore hoped that the present catalogue will be found useful. In 1861 Mr. Thomas Bland² wrote a most important paper on the land-shells of the West Indian Islands, and added a list of the known species of each. Under St. Vincent, he enumerated a dozen forms, half of which were originally described by Guilding, who was the first to pay special attention to the fauna of this island. The next list of the known species was that published by Dr. W. Kobelt³ in 1880, in which three more species were added to those enumerated by Bland, raising the total to fifteen. Mr. R. J. Lechmere Guppy⁴ in the following year issued another list, including four species not mentioned in the previous catalogues. The *Stenogyra spiculum* erroneously quoted by Kobelt was described by Benson as from St. Vincents, one of the Cape Verd Islands, and therefore has no connection with the West Indian fauna.

In the present collection thirteen terrestrial species occur which have not previously been recorded from the island, besides four fresh-water forms. Of this number only three appear to be new, the rest being species which are, with one exception, distributed in other islands of the West Indies. The single exceptional species referred

¹ Annals and Magazine of Natural History, 1888, vol. ii, pp. 227-234, and pp. 419, 420; and 1889, vol. iii, pp. 400-405.

² Ann. Lyceum Nat. Hist. New York, vol. vii, pp. 335-361.

³ Jahrb. deutsch. mal. Gesell. 1880, p. 284.

⁴ Proc. Sci. Assoc. Trinidad, vol. ii, pp. 163-166 (1881).



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to, *Streptaxis* (*Ammonoceras*) *Thomasi*, was originally described from New Granada. As Mr. Smith also collected it in Grenada, the possibility suggests itself that the type specimens may have come from that island and not from New Granada.

Some doubt exists with regard to the occurrence of two or three of the listed species at St. Vincent; at all events, it is many years since they have been recorded from the island. Among these may be mentioned *Bulinulus Vincentinus*, *B. limnoides*, *B. exilis*, and *Amphibulina tigrina*.

A number of specimens in the British Museum are labelled "St. Vincent," and were purchased in the year 1839 at the sale of Guilding's collection. On investigation, however, there is no evidence of their having been obtained from that island. It seems probable that this locality was assigned to them, from the fact that Guilding resided there for some time. Unfortunately, some of these have already been quoted in one or two of the writer's own papers, e.g., *Bulinulus tenuissimus*, *Cyldrella costata*, *Helicina substriata*, and *Helicina fasciata*. Those, therefore, should be struck out of the St. Vincent fauna. The following table will show at a glance the distribution of the various species. It will be noticed that only four out of the thirty-eight enumerated are, as far as we know at present, peculiar to the island, and there is every probability that most of these will eventually be discovered in other localities.

The relationship of the fauna of St. Vincent to that of the neighbouring islands appears to sustain the deduction that this island and the group of islands to the south, as far as and including Trinidad, rest upon a "submerged ridge" or extension off the north part of the South American continent.¹ Fifteen of the St. Vincent species are found in Grenada and eleven in Trinidad, and eleven range as far as the mainland. Only seven species are common to St. Vincent and Barbados, and only four to St. Lucia. This paucity of common species might, however, be expected, for these two islands are separated from St. Vincent by very deep water, a depth of 1,346 fathoms separating the latter, and 1,000-2,000 the former, indicative of a remote connection, if any, with St. Vincent.

¹ Cf. Bland, Proc. Amer. Philos. Soc. 1873, vol. xii, p. 58.

TABLE OF DISTRIBUTION OF THE SPECIES.

NAMES OF THE SPECIES.	BARBADOS.	ST. VINCENT.	GRENADA.	TRINIDAD.	OTHER LOCALITIES.
* <i>Streptaxis (Ammonoceras) Thomasi</i>		×	×		New Granada.
* <i>Stenopus cruentatus</i>		×			
* " <i>insidiosus</i> , n.sp.		×			
* <i>Guppya livida</i>		×	×		Venezuela.
* <i>Vitrea sublimpida</i> , n.sp.		×	×		
* " (<i>Conulus</i>) <i>simulans</i>		×			Jamaica.
* <i>Thysanophora fuscula</i>		×	×		Jamaica.
* <i>Bulinulus (Drymeus) stramineus</i>		×			Bequia Island and Mustique Island.
" " <i>Vincentinus</i>		×		×	
" (<i>Leptomerus</i>) <i>limnoides</i>		×			Guadeloupe.
" (<i>Thaumastus</i>) <i>exilis</i>	×	×			Guadeloupe, Dominica, etc.
* <i>Simpulopsis Vincentina</i> , n.sp.		×			
* <i>Bulinus oblongus</i>	×	×	×	×	Other islands and S. America.
* " (<i>Plecochilus</i>) <i>auris-sileni</i>		×			Cayenne.
* " " <i>undulatus</i>		×			
<i>Orthalicus zebra</i>	×	×		×	Grenadines, Mazatlan to Mexico, Florida, S. America.
* <i>Succinea Cuvieri</i>		×	×		St. Lucia and Martinique.
<i>Amphibulina tigrina</i>		×			Dominica.
<i>Veronicella occidentalis</i>		×			Guadeloupe, Dominica.
* <i>Geostilbia aperta</i>		×			New Caledonia!
* <i>Cecilioides minutissima</i>		×		×	
* <i>Opcas plicatella</i>		×	×	×	St. Lucia.
* " <i>Goodalli</i>		×			Many W.I. islands and S. America.
* " <i>miera</i>		×	×		Several W.I. islands and S. America.
* " <i>Beckiana</i>	×	×	×	×	Mexico, Peru, Brazil, etc.
* <i>Subulina octona</i>	×	×	×	×	Most W.I. islands, S. America, Africa, etc.
* <i>Leptinaria lamellata</i>	×	×	×	×	Porto Rico, Guadeloupe, S. America.
* <i>Cylindrella collaris</i>		×			(Porto Rico, Martinique, Guadeloupe, Barbados) ?
* <i>Cyclotus Grenadensis</i>		×	×	×	
* <i>Helicina occidentalis</i>		×	×		
* " <i>rugosa</i>		×			Cuba, Hayti.
* <i>Aneylus irroratus</i>		×			
" <i>radiatus</i>		×	×		
* <i>Physa rivialis</i>	×	×	×	×	Brazil, Cuba, etc.
* <i>Planorbis cultratus</i>		×			Cuba, Martinique, Guadeloupe.
* " <i>lucidus</i>		×			Cuba, Porto Rico, Guadeloupe, Martinique.
<i>Melampus cingulatus</i>		×			Cuba, Jamaica, Porto Rico.
* <i>Neritina punctulata</i>		×			Many W.I. islands, Mexico.

* Species marked with an asterisk were collected by Mr. H. H. Smith.

ENUMERATION OF THE SPECIES.

1. STREPTAXIS (AMMONOCERAS) THOMASI (Pfeiffer).

Helix Thomasi, Pfr.—Proc. Zool. Soc. 1854, p. 54; Monog. Hel., vol. iv, p. 102; Reeve, Conch. Icon., sp. 1332.

Streptaxis Thomasi.—Tryon, Man. Conch., ser. II, vol. i, p. 65, pl. xiii, fig. 48, copied from Reeve; Pfeiffer, Nomenclator, p. 15.

Hab.—Marmato, New Granada (Pfr.); “Dry forest, about 1,600 feet, in crevices of rocks. Rare” (H. H. Smith).

Also collected by Mr. Smith at Grenada, W.I. One specimen, larger than the rest, is 9 mm. in its greater diameter. The others are of about the same dimensions as those given by Pfeiffer.

2. STENOPUS CRUENTATUS, Guilding.

S. cruentatus, Guilding.—Zool. Journ., vol. iii, p. 527, pl. xv, figs. 1-5; Swainson, Malacol., p. 190, fig. 33, copy from Guilding; Sowerby, Conch. Man., ed. 4, p. 283, fig. 515; Gray, Fig. Moll. Anim., pl. lxxii, figs. 2 and 4, after Guilding, pl. cclxxxviii, fig. 4, copy of Swainson; H. and A. Adams, Gen. Moll., vol. ii, p. 221, pl. lxxix, figs. 4, 4a, after Guilding; Reeve, Conch. Icon., *Helix*, fig. 1463; Tryon, Man. Conch., ser. II, vol. ii, p. 183, pl. liv, fig. 26.

Hab.—Moderately plentiful on dead palm leaves on the summit of Mount St. Andrea (Guilding); St. Vincent, no special locality (H. H. Smith).

Only a single dead specimen in the present collection.

3. ? STENOPUS INSIDIOSUS, n.sp. Pl. XXI, Figs. 1-3.

Testa parva, orbicularis, anguste umbilicata, tenuis, pellucida, albida, polita; spira supra anfractum ultimum leviter elata; anfractus $4\frac{1}{2}$ convexiusculi, ad suturam marginati, regulariter acrescentes, leves, ultimus ad peripheriam rotundatus; apertura lunata; peristoma tenue, simplex, margine columellari ad insertionem leviter incrassato. Diam. maj. 5, min. 4.5 mm.; alt. 3 mm.

Hab.—“Soufriere Volcano, over 3,000 feet” (H. H. S.).

Beyond its general form there is nothing particular to characterize this little species. The spire is more elevated, and the whorls enlarge more slowly, than in *S. cruentatus*.

4. GUPPYA LIVIDA (Guilding).

Stenopus lividus, Guilding.—Zool. Journ., vol. iii, p. 528, tab. supp. 27, figs. 1-3; Sowerby, Conch. Man., ed. 4, p. 283, fig. 516; Martens, Festschrift Gesell. nat. Freunde Berlin, 1873, p. 167, pl. ii, fig. 4; Tryon, Man. Conch., ser. II, vol. ii, p. 182, pl. liv, fig. 16; Reeve, Conch. Icon., *Helix*, fig. 642.

Hab.—Same as *Stenopus cruentatus* (Guilding); Venezuela (Martens); St. Vincent (H. H. S.).

A single specimen, without any special locality. *Conulus vacans*,

Guppy,¹ from Trinidad, said to be synonymous with this species, is probably distinct.

5. *VITREA* *SUBLIMPIDA*, n.sp. Pl. XXI, Figs. 10-12.

Testa minuta, umbilicata, depressa, orbiculata, pellucida, lineis incrementi tenuissimis striata; spira brevis, ad apicem obtusa; aufractus quatuor, convexi, lente accrescentes, sutura profunda sejuncti, ultimus ad peripheriam rotundatus; apertura parva, oblique lunata; peristoma tenue, margine columellari ad insertionem vix expanso vel reflexo. Diam. maj. 1.6, min. 1.5 mm.; alt. 1 mm.

Hab.—St. Vincent (H. H. S.). One dead specimen.

A single live example of this minute species was also obtained by Mr. Smith at Grenada.

6. *VITREA* (*CONULUS*) *SIMULANS* (C. B. Adams).

Helix simulans, C. B. Adams.—Contrib. Conch., vol. i, p. 35; Pfeiffer, Mon. Hel., vol. iii, p. 51; Conch.-Cab., ed. 2, p. 320, pl. cxxix, figs. 13-15; Reeve, Conch. Icon., sp. 351.

Zonites (*Conulus*) *simulans*.—Tryon, Man. Conch., ser. II, vol. ii, p. 174, pl. liii, figs. 49, 50.

Hab.—Jamaica (Adams); "open alluvial land near the sea; rare under stones" (H. H. S.).

The specimens from St. Vincent agree precisely with this Jamaican species. "*Helix Gundlachi*," Pfr., is probably the same as this species. It occurs in Cuba, Jamaica, St. Thomas, Nicaragua, etc.

7. *THYSANOPHORA* *FUSCULA* (C. B. Adams).

Helix fuscula, C. B. Adams.—Contrib. Conch., vol. i, p. 35; Pfeiffer, Mon. Hel., vol. iii, p. 82; Conch.-Cab., ed. 2, p. 357, pl. cxxxvi, figs. 21-23; Tryon, Man. Conch., ser. II, vol. iii, p. 98, pl. xix, fig. 24.

Thysanophora fuscula.—Pilsbry, Man. Conch., ser. II, vol. ix, p. 58.

Hab.—Jamaica (C. B. Adams); "Leeward, dry forest, above Chateaubelair, 1000 feet, in rubbish, crevices of rocks, very rare" (H. H. S.).

It is possible that this species and *Vitrea simulans* may have been introduced into St. Vincent with vegetation. One specimen was also found by Mr. Smith at Grenada.

8. *BULIMULUS* (*DRYMÆUS*) *STRAMINEUS* (Guilding). Pl. XXI, Fig. 9.

Bulinus stramineus, Guilding.—Trans. Linn. Soc. 1824, vol. xiv, p. 340.

Bulimulus stramineus, Guilding.—Zool. Journ., vol. iv, p. 170; Bland, Ann. Lye. Nat. Hist. New York, 1875, vol. xi, p. 84.

Bulinus stramineus.—Reeve, Conch. Icon., fig. 632.

Bulinus lucidus, Reeve.—*op. cit.*, fig. 245.

Hab.—It abounds in rainy weather in the underwood about Fort Charlotte and other parts of the island (Guilding); "common locally, principally on the leeward side, in rather damp forest hill-sides, below 1,500 feet. In damp weather is found on leaves or tree-trunks; conceals itself at roots of trees in dry weather" (H. H. Smith).

¹ Proc. Scient. Assoc. Trinidad, 1882, part xii, p. 164.

Var. *fasciata*. (Pl. XXI, Fig. 9.) Like the type, but banded with purplish black or purplish red. There are usually four bands on the body-whorl—one at the middle, one half-way between it and the suture, the third equally distant below the middle, and the fourth around the umbilicus. Mr. H. H. Smith's note on this variety reads: "Leeward side, dry forest below 1,000 feet, on leaves (wet weather) or at roots of trees and in crevices of rocks (dry weather). The animal is green, like the allied [typical] form, and this is probably a variety, but is found in much dryer situations, principally on the ridges between Cumberland and Largon. Rarely the two forms are associated; nowhere common." Bland has referred to this banded form.

B. lucidus, Reeve, is undoubtedly the same as this species, but whether it is also identical with *B. lucidus*, Beck, as stated by Pfeiffer, is somewhat uncertain. Allowing for inaccuracy of drawing, the figures in Férussac's work (Hist. Nat. Moll., vol. iv, Atlas, pl. cxliib, figs. 9, 10), upon which *B. lucidus* was founded, may possibly represent this species.

Fresh specimens of *B. stramineus* are almost of a golden yellow, but this brightness soon fades, leaving the tint very much whiter.

9. BULIMULUS (DRYMEUS) VINCENTINUS (Pfeiffer).

Bulinus Vincentinus, Pfr.—Proc. Zool. Soc. 1846, p. 30; Mon. Hel., vol. ii, p. 30; Reeve, Conch. Icon., vol. v, figs. 366a, b.

Hab.—St. Vincent (Pfr.); Trinidad (Guppy).

Of this species Mr. Guppy remarks (1882): "I have some suspicion that *B. Vincentinus* is not confined to Trinidad, as lately supposed, but is also found in St. Vincent."

10. BULIMULUS (LEPTOMERUS) LIMNOIDES (Férussac).

Helix limnoides, Fér.—Prodrome, p. 57, No. 393, pl. cxlii, figs. 9, 10.

Hab.—St. Vincent (Fér.).

The identification of this species is rather uncertain, and a re-examination of Férussac's type is most desirable.

11. BULIMULUS (THAUMASTUS) EXILIS (Gmelin).

Helix exilis, Gmelin.—Syst. Nat., p. 3668. For synonymy see Pfeiffer's Mon. Hel., vol. ii, p. 224; vol. iii, p. 433; vol. iv, p. 498; vol. vi, p. 146.

Hab.—St. Vincent (Guilding *teste* Pfeiffer).

A common West Indian species; known from Guadeloupe, St. Thomas, Porto Rico, Barbuda, Barbados, Dominica, and also from Cayenne on the mainland.

12. SIMPULOPSIS VINCENTINA, n.sp. Pl. XXI, Figs. 4, 5.

Testa ovata, tenuissima, dilute virenti-cornea; spira obtuse conoidea; anfractus 3, superiores duo striis confertis tenuissimis undulatis sculpti, primus ad apicem involutus, ultimus amplus, oblique tenuiter plicatus, et transversim *obsolete* substriatus, haud descendens; apertura inverse auriformis; peristoma undique tenuissimum. Longit. 13, diam. maj. 10 mm.

Hab.—Damp forest, Upper Richmond Valley, 2,000 feet, on leaves of *Artanthe* (*Piperaceæ*) (H. H. Smith).

Only a single specimen was collected. The ovate form, rather

conical spire, and the peculiar fine sculpture of the two upper whorls distinguish this form from other species of the genus.

13. *BULIMUS OBLONGUS* (Müller).

Bulimus oblongus.—Reeve, Conch. Icon., fig. 210.

Hab.—"Open places and second growth below 1,000 feet, under vegetable débris; pretty common; rarely found in dry forest." (H. H. S.)

In a note accompanying the specimens, Mr. H. H. Smith observes: "In my opinion *B. oblongus* is not indigenous in St. Vincent. The Indians ate this and other large *Bulimi*, and may readily have introduced this species from the mainland, where it is common, and where they often went in their forays." The examples collected belong to the typical form, but are a little smaller and somewhat thinner than the shell figured by Reeve.

14. *BULIMUS (PLECOCHILUS) AURIS-SILENI* (Born).

Voluta auris-sileni, Born. — Index test. Vindobon, p. 212, pl. ix, figs. 3, 4.

Bulimus auris-sileni.—Küster, Conch.-Cab., ed. 2, p. 46, pl. xiv, figs. 3, 4, pl. xxii, fig. 9; Reeve, Conch. Icon., fig. 164.

Carychium undulatum.—Leach, Zool. Miscell., vol. i, p. 83, pl. xxxvii.

Plekocheilus undulatus.—Guilding, Zool. Journ., vol. iii, p. 533.

Caprella undulata.—Guilding, Linn. Trans., vol. xiv, p. 341.

Hab.—"In immense numbers in the forests of St. Vincent" (Guilding); "all parts of the island, but not abundant on leaves of trees in forest at 500–2,000 feet elevation; in dry weather it conceals itself at the roots under leaves" (H. H. Smith).

This well-known species is also said to occur at Cayenne. (Pfr., Mon. Hel., vii, p. 37.)

15. *BULIMUS (PLECOCHILUS) UNDULATUS*, Guilding.

Bulimulus undulatus, Guilding.—Zool. Journ., vol. iv, p. 169.

Bulimus undulatus.—Reeve, Conch. Icon., fig. 247; Pfeiffer, Conch.-Cab., ed. 2, p. 167, pl. I, figs. 7, 8.

Hab.—"Frequens in arboribus Sti. Vincentii, ad radices montis Bon Homme" (Guilding); "very rare, observed only on a mountain ridge between Mt. St. Andrews and the Grand Bonhomme, about 2,000 feet, damp forest, generally on leaves of palm trees" (H. H. Smith).

16. *ORTHALICUS ZEBRA* (Müller).

Bulimus zebra.—Reeve, Conch. Icon., pl. xv, fig. 90, pl. xxvii, fig. 90b; Küster, Conch.-Cab., p. iv, pl. ii, figs. 4, 5, pl. xxii, figs. 11, 12; Shuttleworth, Notitiæ Mal., pl. viii, figs. 3, 4, pl. iii, figs. 1–3, *obductus*; pl. iv, figs. 6, 7, *pulchellus*; pl. iii, figs. 4, 5, *undatus*, etc.

Hab.—St. Vincent (Rawson Coll.).

This species is included in the St. Vincent fauna on the authority of specimens in the collection of Sir Rawson Rawson, which he received from the late Thomas Bland, and consequently it seems probable, although there is some doubt, that this species really occurs in the island. It is exceedingly variable, and several forms of it have

already been described as distinct species: *Orthalicus obductus*, Shuttleworth; *Bulinus melanocephalus*, Valenciennes; *Achatina pulchella*, Spix; *Bul. princeps*, Broderip; *B. undatus*, Bruguière; *Zebra Mülleri*, Chemn., etc. It ranges from Mazatlan to Mexico, Panama, and Florida, along the northern parts of South America, and through several of the West Indian Islands, namely, Cuba, Jamaica, Cariacou, Grenadines (Rawson), Barbados, and Trinidad. How far its occurrence in some of these localities may be due to human agency, it is impossible to show. In speaking of this species in his paper on the fauna of Trinidad, Mr. Guppy¹ refers to a form of it "described by Guilding as *B. undulatus*." I have not succeeded yet in finding a description by Guilding of any species bearing that name, except the preceding, which has no relationship with *Orthalicus zebra*. It seems to me, therefore, nearly certain that some mistake has crept in here.

17. *Succinea Cuvieri*, Guilding.

Succinea Cuvieri, Guilding.—Zool. Journ. 1826, vol. ii, p. 443, tab. suppl. 17 bis, figs. 1-5; Pfeiffer, Mon. Hel., vol. ii, p. 530.

Hab.—"In umbrosis Sti. Vincentii sub lapidibus" (Guilding). "Open or shady places, under rubbish; sometimes in the forest, below 1,000 feet, but generally near the sea. Common principally about the southern end of the island, and on the windward side." (H. H. Smith.)

This species was also collected by Mr. H. H. Smith at Grenada. According to Guppy (Proc. Scient. Assoc. Trinidad, vol. ii, p. 166), it also occurs in St. Lucia and Martinique.

18. *Amphibulima tigrina* (Lesueur).

Succinea tigrina, Lesueur.—Férussac's Hist. Moll., vol. II, pt. ii, p. 140, pl. xia, fig. 4.

Hab.—St. Vincent (Férussac).

This species is well known to inhabit Dominica, but its presence in St. Vincent requires confirmation.

19. *Veronicella occidentalis* (Guilding).

Onchidium occidentale, Gld.—Trans. Linn. Soc. 1823, vol. xiv, p. 323, pl. ix, figs. 9-12.

Hab.—St. Vincent (Guilding).

This species has also been quoted from Guadeloupe, Dominica, Trinidad, etc.; "these records, however, are mostly worthless, being based on a supposition that almost any *Veronicella* found in the West Indies might safely be dubbed *occidentalis*" (Cockerell, Conchologist, vol. ii, pp. 219, 220).

20. *Geostilbia aperta* (Swainson).

Megaspiru aperta, Guilding MSS., Swainson.—Malacol., p. 335, figs. 97e, f, on p. 333.

Geostilbia Caledonica, Crosse.—Journ. de Conch. 1867, p. 186, pl. vii, fig. 4; Pfeiffer, Mon. Hel., vol. vi, p. 244.

Hab.—St. Vincent (Guilding Collection, Brit. Mus.); "Noumea,

¹ Journ. Conchol., vol. vii, pp. 217-8.

Novæ-Caledoniæ, in hortis, sub foliis emortuis, sub lignis detritis, et in terra frequens" (Crosse).

I have no hesitation in pronouncing the New Caledonian and West Indian specimens identical. It is not, however, absolutely certain that the specimens obtained by the British Museum in 1839 at the sale of Guilding's collection (although labelled St. Vincent) came from that island; but that they are West Indian specimens, there is no doubt whatever. It therefore seems probable that this species is an importation into New Caledonia with West Indian plants or shrubs. It is a well-known fact that *Subulina octona* has a most remarkable distribution, attributable probably to the same cause.

The genus *Megaspira* was proposed by Swainson, not only to include this species but also the common *Subulina octona* referred to above. It seems questionable whether there are sufficient differences to distinguish the genus *Geostilbia* from *Cecilioides*. *Geostilbia* is described by Cooke¹ as a "markedly Indian" genus (!), a statement far from accurate. Only one or two species appear to have been noticed in India, whereas four, at least, occur in the West Indies, which may be regarded as the metropolis of the genus as far as it is known at present.

21. *CECILIOIDES MINUTISSIMA* (Guppy).

Glandina minutissima, Guppy.—Proc. Scient. Assoc. Trinidad, 1868, vol. i, p. 239; Crosse, Journ. de. Conch. 1890, p. 36, pl. ii, fig. 1.

? *Oleacina minutissima*.—Pfeiffer, Mon. Hel., vol. viii, p. 326.

Geostilbia minutissima.—Guppy, Journ. of Conch. 1893, vol. vii, p. 211.

Hab.—"Amongst dead leaves at Maraccas," Trinidad (Guppy); "Dry forest, leeward, at 1,000 feet, in rubbish," St. Vincent (H. H. Smith).

Two specimens from St. Vincent apparently belong to this species. It exhibits a rather more distinct truncation of the columella than the typical form of *Geostilbia*.

22. *OPEAS PLICATELLA* (Guppy). Pl. XXI, Fig. 15.

Stenogyra plicatella, Guppy.—Ann. Mag. Nat. Hist. 1868, vol. i, p. 438; Pfeiffer, Mon. Hel., vol. viii, p. 137.

Hab.—Trinidad, Grenada, and St. Vincent (Guppy); St. Lucia (Tate). "Common in shady, damp places, and forest, 1,500 feet to near sea-level. Under stones, at roots of trees, and in crevices of rocks. Not observed about the southern end of the island" (H. H. Smith).

Also collected at Grenada by Mr. Smith.

23. *OPEAS GOODALLII* (Miller).

Bulinus Goodallii (Miller).—Pfeiffer, Mon. Hel., vol. ii, p. 159; Reeve, Conch. Icon., fig. 621; Gray, Turton's Man. Land and Fr.-Water Shells, 1840, pl. vi, fig. 61.

Hab.—Same as *O. micra*.

¹ Cambridge Nat. Hist., vol. iii, p. 338.

Cuba, Guadeloupe, Jamaica, Porto Rico, St. Thomas, and other islands, S. America.

24. OPEAS MICRA, D'Orbigny.

Bulinus micra, D'Orb.—Voy. Amér. Mérid., p. 262, pl. xli, figs. 18–20 (1835); Reeve, Conch. Icon., fig. 78, enlarged, and fig. 579.

Bulinus octonoides, C. B. Adams, 1845; Reeve, Conch. Icon., fig. 593.

Hab.—"Common under stones and rubbish, generally in somewhat damp thickets near the sea, but also in dry forest to 1,000 ft. or more. All parts of the island, but less abundant about the southern end" (H. H. Smith).

Also found in Jamaica, St. Thomas, Cuba, and some other islands; in Brazil, Fernando Noronha, Venezuela, Colombia, Bolivia.

25. OPEAS BECKIANA (Pfeiffer).

Bulinus Beckianus, Pfr.—Symbolæ Hist. Hel., iii, p. 82; Mon. Helic., vol. ii, p. 164; Conch.-Cab., ed. 2, p. 125, pl. xxxvi, figs. 29–31.

Bulinus oryza, Reeve (? Brnguière).—Conch. Icon., fig. 480.

Bulinus Caraccasensis, Reeve.—*op. cit.*, fig. 580.

Hab.—"Rare, leeward side, dry forest, about 1,000 feet, crevices of rocks and at the roots of trees, in rubbish." (H. H. S.)

The original locality of this species, "insula Opara?" is probably incorrect. It is also said to occur in Brazil, Peru, Caraccas, Panama, Mexico, Haiti, Barbados, Grenada, Guadeloupe. *Opeas micra* (D'Orb.), considered by Martens synonymous with *Caraccasensis*,¹ is quite distinct. The types agree exactly with *O. octonoides* (C. B. Adams).

26. SUBULINA OCTONA (Chemnitz).

Helix octona, Chem.—Conch.-Cab., vol. IX, Abth. ii, p. 190, pl. cxxxvi, fig. 1264; Reeve, Conch. Icon., *Achatina*, fig. 84; Pfeiffer, Conch.-Cab., ed. 2, *Achatina*, p. 342, pl. xxxvii, figs. 19, 20; Deshayes, Hist. Nat. Moll., vol. ii, p. 167, pl. cxxxiv, figs. 19–21; H. and A. Adams, Gen. Moll., pl. lxxi, fig. 3a.

Hab.—"Under damp rubbish, generally in open places near sea-level; sometimes in dry forest to 1,000 feet. Common about the southern end of the island; rare elsewhere." (H. H. S.)

27. LEPTINARIA LAMELLATÁ (Potiez and Michaud).

Achatina lamellata, Pot. et Mich.—Gal. Moll., vol. i, p. 128, pl. xi, figs. 7, 8; Küster, Conch.-Cab., p. 147, pl. xviii, figs. 1, 2, as *Tornatellina*; Deshayes, Hist. Nat. Moll., vol. ii, p. 170, pl. cxxxiv, figs. 12–14, as *Achatina*; Reeve, Conch. Icon., fig. 97, as *Achatina*.

Hab.—"Common in dry forest and shady places, 1,500 feet to sea-level. Under stones and rubbish in all parts of the island." (H. H. S.)

Very variable in length and stoutness.

¹ Martens, Festschrift Gesell. Nat. Fr. Berlin, 1873, p. 191.

28. *CYLINDRELLA COLLARIS* (Férussac).

Helix (*Cochlodina*) *collaris*, Férus.—Prodrôme, p. 65, No. 507; Hist. Moll., pl. clxiii, figs. 5-7; Philippi, Abbild., vol. i, p. 182, pl. i, figs. 9, 10; Pfeiffer, Conch.-Cab., ed. 2, p. 41, pl. iv, figs. 29-34; Sowerby in Reeve's Conch. Icon., vol. xx, fig. 95 (rough!).

Hab.—"Found thus far only in one place, where it is rare: dry rocky hillside in the forest above Chateaubelair (leeward), about 1,000 feet. Conceals itself in crevices of the rocks, coming out sometimes in the rainy season." (H. H. S.)

The distribution of this species is not yet definitely determined, some of the localities assigned to it requiring confirmation. Porto Rico, Martinique, Guadeloupe, are quoted by Férussac; a single specimen in Cuning's collection is labelled "Barbadoes, Dr. Cutter"; and now, for the first time, specimens have been obtained at St. Vincent.

These examples are a trifle larger than usual, but do not differ in other respects. The peristome is described by Pfeiffer as "album," but, if carefully examined, only the upper part appears to be white; the lower half being pale brown. The figure given by Sowerby is as bad as the description is meagre and inaccurate.

29. *CYCLOTUS GRENADENSIS* (Shuttleworth, *emend.*). Pl. XXI, Figs. 6-8.

Cyclostoma Granadense, Shuttl.—Journ. de Conch. 1856, vol. v, p. 266.

Cyclotus Granadensis.—Pfeiffer, Mon. Pneumon., vol. ii, p. 18.

Cyclotus asperulus, Reeve (? Sowerby).—Conch. Icon., pl. vi, fig. 33.

Cyclotus rugatus, Guppy.—Ann. Mag. Nat. Hist. 1864, vol. xiv, p. 246, 1866, vol. xvii, p. 46; Pfeiffer, Mon. Pneumon., vol. iv, p. 34.

Hab.—Grenada (Shuttleworth and H. H. Smith); Trinidad (Guppy, for *C. rugatus*); St. Vincent (Guppy). "Common locally, dry forest, 500-2,000 feet, but principally between 1,000 and 500 feet, at roots of trees, and in crevices of rocks in decaying vegetable matter" (H. H. Smith).

I have compared a considerable series of specimens from Grenada and St. Vincent, and, with the exception of the slightly superior size of those from the latter locality, I can discover no difference. Two examples of *C. rugatus* from Trinidad, presented to the Museum by Mr. Guppy, are also identical with this species. The *Cyclotus asperulus* of Sowerby, as determined by Reeve, also belongs to it, but the true *Cyclostoma asperulum*, as figured in the Thesaurus Conchyliorum, vol. i, pl. xxiii, fig. 3, is apparently a different form.

30. *HELICINA OCCIDENTALIS*, Guilding.

H. occidentalis, Guilding.—Zool. Journ., vol. iii, p. 529, pl. xv, figs. 6-10; Sowerby, Thes. Conch., vol. i, p. 7, pl. ii, figs. 86, 87, vol. iii, p. 292, pl. cclxxvi, figs. 384-5; Pfeiffer, Conch.-Cab., ed. 2, p. 51, pl. vi, figs. 19, 20, pl. a, fig. 13; Swainson, Malacol., p. 184, fig. 28; Gray, Fig. Moll. Anim., pl. ccxi, fig. 4; Sowerby in Reeve's Conch. Icon., fig. 183.

Hab.—In the mountains, scarcely ever below 2,000 ft. (Guilding). “Moderately common on leaves in forest, 500–2,500 ft. In dry weather conceals itself at roots of trees. The paler specimens are from above 2,000 feet. Occurs only in damp forest, generally ravines” (H. H. S. and Geo. W. Smith).

31. *HELICINA RUGOSA*, Pfeiffer.

Helicina rugosa, Pfr.—Mon. Pneumon., vol. i, p. 341; Conch.-Cab., ed. 2, p. 13, pl. iv, figs. 28–30; Sowerby, Thes. Conch., vol. i, p. 14, pl. iii, fig. 132, vol. iii, p. 281, pl. cclxviii, figs. 83, 84; Sowerby in Reeve's Conch. Icon., vol. xix, pl. xiv, figs. 120*a*, *b*.

Hab.—Cuba, Hayti (Pfr). “Leeward, dry forest above Chateaubelair, 1,000 feet, in rubbish, crevices of rocks. Many dead, but only a few live ones were found. Not observed elsewhere” (H. H. S.).

This species has not previously been recorded from St. Vincent. *H. vinosa*, Shuttleworth, from Porto Rico, and *H. ignicoma*, Guppy, from Trinidad, are scarcely separable from this species. The prominence on the basal margin of the peristome is more pronounced in some specimens than others.

32. *ANCYLUS IRRORATUS*, Guilding.

Anchylus irroratus, Guilding.—Zool. Journ., vol. iii, p. 535, tab. suppl. xxvi, figs. 1–6; Sowerby in Reeve's Conch. Icon., vol. xx, fig. 20.

Hab.—Abundant on dead leaves in ditches, St. Vincent (Gld.); “on aquatic plants, warm stagnant water at Brighton, south end of island” (H. H. S.).

33. *ANCYLUS RADIATUS*, Guilding.

Anchylus radiatus, Gld.—Zool. Journ., vol. iii, p. 536, tab. suppl. xxvi, figs. 7–9; Sowerby in Reeve's Conch. Icon., vol. xx, fig. 26.

Hab.—Same as *A. irroratus* (Guilding).

The form of this species is the same as that of *A. irroratus*, but the radiating sculpture is more distinct.

34. *PHYSA RIVALIS* (Maton and Rackett).

Bulla rivalis, M. & R.—Trans. Linn. Soc. 1807, vol. viii, p. 126, pl. iv, fig. 2.

Limnea (Physa) rivalis.—Sowerby, Genera Shells, pl. clxxxix, fig. 9.

Hab.—Brazil, Cuba, Barbados, Trinidad, etc.: “in fossis Sti. Vincentii copiosissime” (Guilding); “sluggish stream, near the sea, Brighton, south end of island, on aquatic plants, also stagnant water, windward side” (H. H. S.).

Guilding described this species under the name of *P. marmorata*¹; and the *P. ventricosa* (Guilding MSS.), Sowerby,² is founded upon large adult specimens of this form. *P. Sowerbyana*, D'Orbigny, and *P. acuminata*, Gray, are also synonymous.

¹ Zool. Journ., vol. iii, p. 534.

² Conch. Icon., fig. 74.

35. *PLANORBIS CULTRATUS*, D'Orbigny.

Planorbis cultratus, D'Orbigny.—Ramon de la Sagra's Hist. Cuba Moll., vol. i, p. 196, pl. xiv, figs. 5-8; Sowerby in Reeve's Conch. Icon., vol. xx, fig. 106; Clessin, Conch.-Cab., ed. 2, p. 148, pl. xxii, fig. 3.

Hab.—Cuba or Martinique (D'Orb.); Guadeloupe and Martinique (Clessin); St. Vincent (Sow.); "stagnant water near Brighton, southern end of the island" (H. H. S.).

Mr. Smith remarks that this species is "less abundant than the other *Planorbis*" (*P. lucidus*). It is at once distinguished from that species by the sharp peripheral keel and flat spire.

36. *PLANORBIS LUCIDUS*, Pfeiffer.

Planorbis lucidus, Pfr.—Wiegmann's Archiv. f. Naturg. 1839, vol. v, p. 354; Sowerby in Reeve's Conch. Icon., vol. xx, fig. 53; Clessin, Conch.-Cab., ed. 2, p. 193, pl. xxix, fig. 2.

Hab.—Cuba, Porto Rico, Guadeloupe, Martinique (Clessin). "Stagnant water near Brighton, southern end of the island. Open places, abundant, and many were found in mud along the margin, and under logs, where the land is overflowed only during the rainy season. Not observed elsewhere" (H. H. S.).

P. lanierianus, D'Orbigny, from Cuba, and *P. tenuatus*, Morelet, from the Island of Pines, off Cuba, appear to be inseparable from this species.

37. *MELAMPUS CINGULATUS* (Pfeiffer).

Auricula cingulata.—Küster, Conch.-Cab., p. 40, pl. vi, figs. 4-6; Sowerby, Conch. Icon., fig. 46.

Hab.—St. Vincent (Kobelt).

Quoted by Kobelt in his list of the species of this island.

38. *NERITINA PUNCTULATA*, Lamarek.

Neritina punctulata.—Reeve, Conch. Icon., vol. ix, figs. 48*a*, *b*; Martens, Conch.-Cab., ed. 2, p. 76, pl. v, figs. 12-15; Tryon, Man. Conch., vol. x, p. 60, pl. xx, figs. 37, 38.

Hab.—Many of the West Indian Islands and Mexico. "Mountain streams, as high as 1,500 feet. Common in some, not found in others" (H. H. S.).

This species was quoted from St. Vincent by the author of the "Conchological Illustrations" nearly sixty years ago. The specimens collected by Mr. Smith came "from the Cumberland River, about 1,000 feet."

II. GRENADA.

Only eight species of land-shells from this island were known to Bland when he published his original list in 1861.¹ This number he subsequently² raised to fourteen, chiefly from the catalogue compiled by Mr. Guppy,³ and in the following list the total is now raised to twenty-five. No attempt at the enumeration of the fresh-water forms has previously been attempted, and even now the determination of one or two of the eight species mentioned is somewhat uncertain.

Of the land-shells, only three appear to be peculiar to the island, namely, *Bulinulus binominis*, *Helicina Keatei*, and *H. Grenadensis*. Sixteen are common to St. Vincent, and eleven occur in Trinidad.

The following table shows at a glance the distribution of each species, those marked with an asterisk forming part of the series collected by Mr. Smith. The remaining five forms not occurring in the present collection are, with one exception, included in the fauna on the authority of Bland and Guppy, and there appears no reason to doubt the correctness of these identifications, except, perhaps, that of the *Veronicella*, which may require re-examination. The one exception referred to above, namely, *Helicina occidentalis*, is quoted on the authority of specimens in Mr. J. H. Ponsoy's collection, which he received direct from his friend Mr. W. H. Lascelles, by whom they were collected. Mr. Lascelles has kindly furnished a few notes on some of the species, which will be quoted further on in their respective places.

In its relationship and general character, the land-fauna of Grenada is very similar to that of St. Vincent, already referred to, and its derivation, doubtless, in a great measure, is due to similar causes.

In discussing the distribution of the Neo-tropical region, Mr. Cooke, in his recent work on Mollusea, remarks that "the Antillean sub-region surpasses all other districts in the world in respect of (1) extraordinary abundance of species, (2) sharp definition of limits as a whole, (3) extreme localization of the fauna of the separate islands." Upon the third of these statements I wish to make a few remarks. It certainly is not borne out by the facts already cited above in connection with the fauna of St. Vincent and Grenada. When we find in the case of the former island that only three out of the thirty-one terrestrial species are peculiar, and that only three out of twenty-five occur in the latter which are not found elsewhere, the inaccuracy of Mr. Cooke's statement becomes apparent. That it may, to a certain extent, be applicable as regards some of the larger islands is very possible, but in the cases I have cited and also as regards Barbados the remark cannot be substantiated. In none of these islands, the molluscs of which have been studied by the writer, does "extreme localization of the fauna" occur.

¹ Ann. Lyceum Nat. Hist. New York, vol. vii, p. 354.

² Amer. Journ. Conch., vol. iv, pp. 187-9.

³ Ann. Mag. Nat. Hist. 1868, vol. i, pp. 435-7.

TABLE OF DISTRIBUTION OF THE SPECIES.

NAMES OF THE SPECIES.	ST. VINCENT.	GRENADA.	TRINIDAD.	OTHER LOCALITIES.
<i>Streptaxis (Ammonoceras) ammonoceras</i>		×		New Granada.
* <i>Streptaxis (Ammonoceras) Thomasi</i>	×	×		
<i>Ennea (Huttonella) bicolor</i>		×	×	St. Thomas, India, etc.
* <i>Vitrea sublimpida</i> , n sp.	×	×		
<i>Guppya semen-lini</i>		×	×	Brazil, Demerara.
* <i>Thysanophora fuscula</i>	×	×		Jamaica.
" <i>diminuta</i>		×		Jamaica.
* <i>Helix (Dentellaria) perplexa</i>	×	×		Martinique, Grenadines.
* <i>Bulimulus (Drymaeus) binominis</i>		×	×	
" <i>tenuissimus</i>	×	×		Barbados, Cayenne, Brazil.
* <i>Bulimus oblongus</i>	×	×	×	Other Is. and S. America.
" (<i>Plecochilus</i>) <i>glaber</i>		×	×	Brazil, Trinidad, Grenadines.
* <i>Succinea Cucicri</i>	×	×	×	St. Lucia, Martinique.
<i>Veronicella Sloanii</i> ?	×	×	×	Jamaica.
* <i>Subulina octona</i>	×	×	×	W. Indies, S. America, Africa, etc.
* <i>Opeas plicatella</i>	×	×	×	St. Lucia.
" <i>Beckiana</i>	×	×	×	Mexico, Peru, Brazil, etc.
" <i>subula</i>		×		Cuba, Jamaica, S. Thomas, etc., Florida, Mexico.
" <i>micra</i>	×	×		W. Indies and S. America.
* <i>Leptinaria lamellata</i>	×	×	×	W. Indies and S. America.
* <i>Pupa pellucida</i>		×		Jamaica, Cuba, Barbados.
* <i>Helicina Keatei</i>		×		
" <i>occidentalis</i>	×	×		
" <i>Grenadensis</i>		×		
* <i>Cyclotus Grenadensis</i>	×	×	×	
* <i>Neritina virginea</i>		×	×	Several W. Indian islands and north part of South America.
* <i>Ampullaria glauca</i>		×	×	Venezuela, British Guiana.
* <i>Paludestrina crystallina</i>		×		Many W. Indian islands and on the mainland of S. America.
* <i>Ancylus radiatus</i>	×	×		
* <i>Physa rivalis</i>	×	×	×	Brazil, Cuba, etc.
* <i>Planorbis Haldemani</i>		×	×	Jamaica.
" <i>terverianus</i>		×	×	Cuba.
* <i>Pisidium pygmaeum</i>		×		Jamaica.

ENUMERATION OF THE SPECIES.

1. STREPTAXIS (AMMONOCERAS) AMMONOCERAS (Pfeiffer).

Helix ammonoceras, Pfr.—Proc. Zool. Soc. 1854, p. 54; Mon. Hel., vol. iv, p. 104; Reeve, Conch. Icon., sp. 1338; Bland, Ann. Lyc. Nat. Hist. New York, 1876, vol. xi, p. 86.

Streptaxis ammonoceras.—Tryon, Man. Conch., ser. II, vol. i, p. 65, pl. xiii, fig. 52.

Hab.—Grenada (Bland). Originally described from Santa Anna, New Granada, where it was discovered by Mr. Bland.

2. STREPTAXIS (AMMONOCERAS) THOMASI (Pfeiffer).

Hab.—"Forest, Grand Etang, 1,900 feet, damp ground, under rotting leaves. Rather rare" (H. H. S.).

For references, see under St. Vincent. Like *S. ammonoceras*, this species also occurs in "New Granada."

Mr. Lascelles found this species in the same place as the var. *Lascellesiana* of *Bulimulus binominis*.

3. ENNEA (HUTTONELLA) BICOLOR (Hutton).

Pupa bicolor, Hutton.—Pfeiffer, Mon. Hel., vol. ii, p. 352; Küster, Conch.-Cab., p. 95, pl. xiii, figs. 9, 10; Sowerby in Reeve's Conch. Icon., vol. xx, fig. 148.

Hab.—"India, Seychelles, Burmah, Cochin China, Indian Archipelago, China, New Caledonia, Islands of St. Thomas, Grenada, and Trinidad, W. I. (introduced)" (Tryon).

Mr. Guppy is the authority for the occurrence of this species in Grenada.

4. VITREA SUBLIMPIDA, n. sp. Pl. XXI, Figs. 10-12.

Hab.—"Chantilly (windward), 500 feet, clearing in forest, under a pile of cut weeds" (H. H. S.).

Also at St. Vincent, one dead specimen.

5. GUPPYA SEMEN-LINI (Moricand).

Helix semen-lini.—Reeve, Conch. Icon., vol. vii, fig. 637.

Conulus vacans, Guppy.—Ann. Mag. Nat. Hist. 1866, vol. xvii, p. 53; *op. cit.*, 1868, vol. i, p. 435.

Guppya livida (non Guikling), Guppy. — Journ. of Conch. 1893, vol. vii, p. 215.

Hab.—Grenada (Guppy).

6. THYSANOPHORA FUSCULA (C. B. Adams).

Hab.—Jamaica, St. Vincent; "Mount Gay Estate (leeward), 250 feet; open place, under a stone, only one seen" (H. H. S.).

For references see under St. Vincent.

7. THYSANOPHORA DIMINUTA (C. B. Adams).

Helix diminuta, C. B. Adams.—Contrib. Conch., p. 36; Reeve, Conch. Icon., sp. 346; Pfeiffer, Conch.-Cab., ed. 2, p. 326, pl. cxxix, figs. 53-5.

Patula diminuta.—Tryon, Man. Conch., ser. II, vol. iii, p. 99, pl. xix, figs. 40, 41.

Thysanophora diminuta.—Pilsbry, Man. Conch., ser. II, vol. ix, p. 58.

Hab.—Jamaica (C. B. Adams); Grenada (Guppy).

This species was not found by Mr. Smith, and its presence in Grenada rests upon the attestation of Mr. Guppy (Ann. Mag. N. H. 1868, vol. i, p. 436).

8. *HELIX* (*DETELLARIA*) *PERPLEXA*, Férussac.

Helix perplexa, Fér.—Hist. Moll., vol. i, p. 378, pl. 56a, fig. 1;

Pilsbry, Man. Conch., vol. v, p. 89, pl. lvi, figs. 15–17;

Reeve, Conch. Icon., fig. 1210, and figs. 252a, b, as *granifera*.

Hab.—“Common in sheltered and shady places, under overhanging roots, logs, etc., below 2,000 feet” (H. H. Smith).

This “is the commonest of our shells, and is found everywhere” (Lacelles).

None of the specimens from Grenada have the spiral band on the upper and under surface so strongly marked as some of the examples from Mustique, also collected by Mr. Smith. Sir Rawson Rawson has specimens of this species from Martinique, St. Vincent?, Carriacou, and Baliceaux, the two latter belonging to the Grenadines.

9. *BULIMULUS* (*DRYMÆUS*) *BINOMINIS*, Smith, nom. nov. Pl. XXI, Figs. 13, 14.

Bulimulus indistinctus, Guppy.—Ann. Mag. Nat. Hist. 1868, vol. i, p. 436; Pfeiffer, Mon. Hel., vol. viii, p. 184.

Hab.—Shady places, 500–1,500 feet, on trees: rather rare. (H. H. Smith.)

The specific name *indistinctus*, having already been applied to a species of *Bulimulus* by Pfeiffer, before its employment by Guppy, it becomes necessary to rename the latter author's species.

Mr. J. H. Ponsoby possesses a new and interesting colour-variety (var. *Lacellesiana*) of this species. It is of a very dark, almost black tint, with two narrow yellowish or whitish transverse zones on the penultimate whorl, and four on the last. The edge of the peristome is also whitish. The third zone from the suture is the broadest, and the fourth or basal one is sometimes somewhat indistinct.

It was discovered by Mr. Lacelles, who observes: “It is, I believe, only found on the Annandale estate, and only on one small part of that—a strip of land facing west on a rocky mountain side, at an elevation of 1,000 to 1,200 feet.” I have much pleasure in associating this very marked variety with the name of its discoverer.

The unbanded typical form “is found on this same land, but is not very uncommon elsewhere.”

10. *BULIMULUS* *TENUISSIMUS* (Férussac).

Bulimus tenuissimus (Fér.).—Deshayes, Hist. Nat. Moll., vol. ii (2),

p. 72, pl. cxlii b, fig. 8; Reeve, Conch. Icon., fig. 288;

Pfeiffer, Conch.-Cab., ed. 2, p. 241, pl. lxi, figs. 25, 26.

Bulimus Barbadosis, Pfeiffer.—P. Z. S. 1852, p. 61; Mon. Hel., vol. iii, p. 435.

Hab.—“Generally on dry hill-sides, under rotten leaves in shady places, below 500 feet; not common.” Also, “Windward coast, near Lake Antoine; open place, on herbage and vines” (H. H. S.).

This species occurs also in Brazil, Cayenne, Barbados, and St. Vincent.

11. *BULIMUS OBLONGUS* (Müller).

Hab.—"This species is moderately common in gardens and shady places below 1,000 feet: difficult to find, as it conceals itself under rubbish, etc. Perhaps an imported species" (H. H. S.).

The distribution and variation of this species have been given by the writer in the Proceedings of the Malacological Society, Vol. I, p. 137.

12. *BULIMUS (PLECOCHILUS) GLABER* (Gmelin).

Bulimus glaber (Gmelin).—Reeve, Conch. Icon., fig. 357; Küster, Conch.-Cab., p. 42, pl. xiii, fig. 7; Deshayes, Hist. Moll., vol. ii (2), p. 63, pl. clii, figs. 13, 14.

Hab.—"Pretty common in shady places on vines and brush or at roots of trees, in all parts of the island" (H. H. S.).

13. *SUCCINEA CUVIERI*, Guilding.

Hab.—"Shady or open places near sea-level, under rubbish. Apparently not common" (H. H. S.).

The specimens from this island are quite similar to those occurring at St. Vincent.

14. *VERONICELLA SLOANII* (Cuvier)?

Onchidium Sloanii, Cuvier.—Règne Anim., vol. ii, p. 411 (1817).

Veronicella Sloanii.—Férussac, Hist. Nat. Moll., vol. ii, p. 82, pl. vii, figs. 8, 9; Cockerell, Conchologist, vol. ii, p. 217.

Hab.—Jamaica (Sloane); Grenada (Guppy).

This species is quoted upon the authority of Mr. Guppy (Ann. Mag. Nat. Hist. 1868, vol. i, p. 435), but there is considerable doubt respecting the correctness of the identification, as he subsequently places it as a synonym of *V. occidentalis* (Journ. of Conch., vol. vii, p. 222).

15. *SUBULINA OCTONA* (Chemnitz).

Hab.—"Common under rubbish, shady and rather damp places, below 2,000 feet, most abundant below 500 feet" (H. H. S.).

16. *OPEAS PLICATELLA* (Guppy). Pl. XXI, Fig. 15.

Hab.—"Forest and shady places, under stones and rubbish. It seems to be rather rare, but occurs from 2,000 feet to near sea-level" (H. H. S.).

17. *OPEAS BECKIANA* (Pfeiffer).

Hab.—"Dry shady places below 500 feet, rather rare; most of the specimens were found near the southern end of the island" (H. H. S.).

18. *OPEAS SUBULA* (Pfeiffer).

Achatina subula.—Wiegmann's Archiv. f. Naturg. 1839, vol. i, p. 352; Reeve, Conch. Icon., vol. v (*Bulimus*), pl. lxix, fig. 494.

Hab.—Cuba, etc., Florida, Mexico, Venezuela, Fernando Noronha, Borneo. "Leeward side, Mount Gay Estate, 150 feet, under rubbish" (H. H. S.).

This species has also been quoted from Porto Rico, St. Thomas, Antigua, and Barbados.

19. *OPEAS MICRA*, D'Orbigny.

Hab.—"Near the sea-coast, about the southern end of the island; shady places under rubbish" (H. H. S.). Also, "Windward coast at Telescope Estate, under trailing plants on the sands; abundant in this situation. This species seems to be confined to places near the sea" (H. H. S.).

The specimens from the latter district differ from those from the other locality in being smoother, exhibiting scarcely any of the longitudinal striæ which characterize the typical form.

20. *LEPTINARIA LAMELLATA* (Pot. and Mich.).

Hab.—"Shady or open places below 1,000 feet, under rubbish, etc.; common locally" (H. H. S.).

L. Funcki, Pfr., quoted by Bland from Grenada, appears to be one of the many slight varieties of this well-known form.

21. *PUPA PELLUCIDA*, Pfeiffer.

Pupa pellucida, Pfr.—Mon. Hel., vol. ii, p. 360; Conch.-Cab., p. 89, pl. xii, figs. 24, 25.

Pupa Jamaicensis, C. B. Adams.—Contrib. Conch., p. 37; Pfr., Mon. Hel., vol. iii, p. 558; Conch.-Cab., p. 138, pl. xvii, figs. 27, 28.

Hab.—"Windward coast, at Telescope Estate, very abundant under trailing plants on the sands; not observed elsewhere" (H. H. S.).

Jamaica, Cuba, and Barbados are other localities for this little shell.

22. *HELICINA KEATEI*, Pfeiffer (*emend.*). Pl. XXI, Figs. 19, 20. *Helicina Heatei*, Pfr.—Proc. Zool. Soc. 1856, p. 392; Mon. Pneumon., vol. ii, p. 211; Sowerby in Reeve's Conch. Leon., vol. xix, fig. 79 (as *Keatii*).

Hab.—"Shady damp places, forest or second growth, 200-2,000 feet, not common, generally found on herbage" (H. H. S.).

This species occurs only in Grenada. It is variable in colour, the ground being pale yellow or vinous red, and the peristome and basal callus may be bright orange-red or pale yellow. The specific name should be *Keatei*, not *Heatei* as originally printed, this very pretty form being named after Robert William Keate, Lieut.-Governor of Grenada at that time.

23. *HELICINA OCCIDENTALIS*, var.

Hab.—Grenada (Lascelles).

The Grenada specimens are somewhat smaller than the St. Vincent form, and consequently belong to the var. β . Beyond difference in size, they offer no distinctions.

Both the banded and the uniformly yellow forms occur in Grenada. "It ranges from about 700 feet upwards. One specimen I found at an altitude of 2,500 feet. This is almost the only shell I have found in the virgin forest on the mountains, the other shells being mainly found in cultivation—more especially in banana and plantain cultivation" (Lascelles).

24. *HELICINA GRENADENSIS*, n.sp. Pl. XXI, Figs. 16-18.

Testa parva, depressa, rufescenti-cornea, subpellucida, nitida; spira brevissime conoidea, convexiusculi, ad apicem, mediocriter obtusa;

anfractus $4\frac{1}{2}$ medioeriter convexi, regulariter accrescentes, lincis incrementi tenuissimis sculpti, ultimus in medio acute rotundatus, haud angulatus, subtus in medio impressus; apertura parva, subobliqua, intus rufescens; peristoma rufescens, leviter incrassatum et reflexum, margine basali in medio prominulo; callus basalis plus minus rufescens, minute granulatus. Diam. maj. 3.75, min. 3.3 mm.; alt. 2.5 mm.

Hab.—"Pretty common below 1,000 feet; shady damp places, especially cocoa orchards, under rotting leaves" (H. H. S.).

Specimens of this pretty little species are generally a trifle smaller than those of *H. rugosa*, Pfr., from St. Vincent. The species are very much alike as regards form, but the great difference of sculpture readily distinguishes them. The operculum is wanting in all the specimens collected, and cannot therefore be described.

H. minutissima, Newcomb MS., quoted by Bland (Amer. Journ. Conch., vol. iv, p. 188), may be the same as this species.

25. *CYCLOTUS GRENADENSIS*, Shuttleworth. Pl. XXI, Figs. 6-8.

Hab.—"Common in shady and rather dry places, hill-sides, cocoa orchards, etc., below 2,000 feet; under rotting leaves and rubbish" (H. H. S.).

Also occurs at St. Vincent and Trinidad. It "is more common at altitudes of 900 feet and over than at lower altitudes" (Lacelles).

26. *NERITINA VIRGINEA* (Linn.).

Neritina virginea.—Martens, Conch.-Cab., ed. 2, p. 122, pl. x, figs. 5, 6; pl. xiv, figs. 1-21.

Hab.—"Common locally in sluggish streams near the sea; not observed in swift streams" (H. H. S.).

Common in many of the West Indian islands, also on the mainland of S. America; it occurs in Trinidad.

27. *AMPULLARIA GLAUCA* (Linn.).

Ampullaria glauca.—Philippi, Conch.-Cab., ed. 2, p. 43, pl. xii, fig. 4; Reeve, Conch. Icon., vol. x, fig. 85a, b.

Hab.—British Guiana, Venezuela, Trinidad; "common in sluggish streams, below 500 feet" (H. H. S.).

A. erocostoma, Phil., *A. luteostoma*, Swains., *A. castanea*, Desh., and *A. oronocensis*, Reeve, are varieties of this species.

It was found by Mr. Lacelles "in a swamp about 800 feet above sea-level."

28. *PALUDESTRINA CRYSTALLINA*, Pfeiffer.

Paludina crystallina, Pfr.—Wiegmann's Archiv. f. Naturg. 1840, p. 253; Philippi, Abbild., vol. i, p. 118, pl. i, fig. 18 (fig. 17, var. *coronata*); Küster, Conch.-Cab., p. 50, pl. x, figs. 7, 8 (figs. 9-12, var. *coronata*).

Hydrobia coronata (Pfr.), Martens.—Festschrift Gesell. nat. Freunde, Berlin, 1873, p. 208, pl. ii, fig. 13.

Hab.—"Springs and streams below 1,000 feet" (H. H. S.).

This species is common to most of the West Indian islands, and occurs also on the mainland of S. America. All the specimens from Grenada (200-300) have smooth rounded whorls, none exhibiting the coronation of the variety.

29. *ANCYLUS RADIATUS*, Gld., var.

Hab.—"Common locally in ditches and sluggish streams, below 800 feet" (H. H. S.).

The specimens from Grenada are less elevated than those from St. Vincent. They are also larger apparently, but exhibit similar radiating striæ.

30. *PHYSA RIVALIS* (Maton and Rackett).

Hab.—"Ditches and springs below 1,000 feet, pretty common" (H. H. S.).

31. *PLANORBIS HALDEMANI*, C. B. Adams. Pl. XXI, Figs. 21-23.

Planorbis Haldemani, C. B. Ad.—Contrib. Conch., vol. i, p. 43 (1849).

Hab.—Jamaica (Ad.); Trinidad (Guppy in Brit. Mus.); "ditches below 500 feet, rare" (H. H. S.).

A Mexican species was described by Dunker under this name in 1850, which is very different from the shells from Grenada and Trinidad. The latter were presented to the British Museum by Mr. Guppy, along with specimens of his *P. meniscus*, which I believe are the same as *P. lucidus*, Pfr.

32. *PLANORBIS TERVERIANUS*, D'Orbigny?

Planorbis terverianus, D'Orb.—Ramon de la Sagra's Hist. Cuba, Moll. vol. i, p. 194, pl. xiii, figs. 20-22; Clessin, Conch.-Cab., ed. 2, p. 155, pl. xxiii, fig. 5.

Hab.—Cuba (D'Orbigny); Trinidad (Guppy); "Leeward side near St. George's, in mud at bottom of a small ditch, open place, 200 feet" (H. H. S.).

Ten or twelve small specimens may possibly be the young of this species.

33. *PISIDIUM PYGMEUM* (C. B. Adams)?

Cyclas pygmæa, C. B. Adams.—Contrib. Conch., vol. i, p. 44.

Pisum Adamsi, Deshayes.—Cat. Conchif. Brit. Mus., p. 284.

Pisidium Jamaicense, Prime.—Mon. Amer. Corbieuladæ, 1865, p. 70, fig. 76.

Hab.—Jamaica (C. B. Ad.). Grenada, "still and cold water in shady places below 1,000 feet. Seems to be rare" (H. H. S.).

Having only a single dead Jamaican specimen to compare with the Grenada shells, this determination may be regarded as doubtful. The present examples, however, correspond fairly well with the above-cited figure of Prime. Some, however, are more pointed behind.